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Claims

1. A fractal network for handling complex structures,
5 wherein the fractal network is comprised of a
multiplicity of units, wherein [characterized in
that] said fractal network contains

semantic units (6) each possessing informational
10 contents, as well as

linking units (1 to 5) describing a relational
content which links two respective semantic units (6)
in such a way that the mutual relation of the two
15 linked semantic units (6) is determined by the
relational content,

characterized in that

20 the network additionally contains specific semantic
Janus units which are capable of carrying out
specific operations on further semantic units
(6).[from former claim 21]

25 [22.] 2. A fractal network according to claim 1 [21],
characterized in that each Janus unit is linked with
one or several further semantic units (6) through one
or several linking units (1 to 5), with the
30 functionality of the Janus unit being restricted so
as to be only capable of performing the specific
operations on those semantic units (6) located in a
predetermined vicinity range of this one or these
several linked semantic units (6).

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[23.] 3. A fractal network according to claim 1 [21],
characterized in that a Janus unit is optionally
linked with one or several further Janus units
through one or several linking units (1 to 5).

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[24.] 4. A fractal network according to any one of
claims 1 to 3 [21 to 23], characterized in that a
Janus unit is capable of carrying out one or several
of the following operations: creating new semantic
units (6); bundling already existing semantic units
(6) into a single semantic unit (6) possibly to be
newly created; altering and/or deleting already
existing semantic units (6); comparing existing
semantic units (6); recording and altering the values
of attributes; executing an algorithm and/or
calculating a function; recording and/or altering
algorithms; recording a Janus or a part of a Janus.

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[2.] 5. A fractal network according to any one of
claims 1 to 4, [claim 1] characterized in that the
linking units (1 to 5) are a particular form of
semantic units (6) which may possess informational
contents and relational contents.

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[3.] 6. A fractal network according to any one of
claims 1 to 5, [claims 1 or 2] characterized in that
the informational content described by a semantic
unit (6) represents a characterization and/or an
enumeration of those linking units (1 to 5)
connecting this semantic unit (6) with further
semantic units.

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[4.] 7. A fractal network according to claim 6, [3] *characterized in that* the characterization described by the informational content is a name and/or a serial number.

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[5.] 8. A fractal network according to claim 6, [1 to 7] *characterized in that* the enumeration described by the informational content is present in a structured form.

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[6.] 9. A fractal network according to any one of claims 1 to 8, [8] *characterized in that* besides the informational content, the relational content described by a linking unit (1 to 5) additionally contains a linking characterization describing the respective characterization(s) of the semantic units (6) linked by them, one or two indications of direction in relation to these linked semantic units (6), and/or weightings *G* of the one or two indications of direction.

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[7.] 10. A fractal network according to any one of claims 1 to 9, [1 to 6] *characterized in that* moreover one or several linking units (1 to 5) may in turn be linked with one or several semantic units (6) through one or several respective linking units (1 to 5), and/or one or several linking units (1 to 5) in turn may be linked with one or several linking units (1 to 5) through one or several linking units (1 to 5).

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5 [8.] 11. A fractal network according to any one of
claims 1 to 10, [1 to 7] *characterized in that* the
relational content of a linking unit (1 to 5)
optionally contains information about the respective
type of linking of the interrelated semantic units
(6).

10 [9.] 12. A fractal network according to claim 11, [8]
characterized in that the type of linking described
by a linking unit (1 to 5) optionally moreover
contains information about a relation VR, i.e., about
a comparison of the respective linked units, and/or
15 about an exchange relation VA, i.e., about a uni- or
bilateral interaction of the linked units.

20 [10.] 13. A fractal network according to claim 11 or 12,
[8 or 9] *characterized in that* the type of linking
described by a linking unit additionally contains
information about whether a scale change VS takes
place in the type of linking or whether no scale
change VH takes place.

25 [11.] 14. A fractal network according to any one of
claims 11 to 13, [8 to 10] *characterized in that* the
relational content of a linking unit (1 to 5)
contains information about the respective type of
30 linking, consisting of the pairs VS/VR, VS/VA, VH/VR
or VH/VA.

35 [12.] 15. A fractal network according to claim 13 or 14,
[10 or 11] *characterized in that* the scaling
information VS has the function of describing the

type of relation with a larger, i.e., superordinate, or with a smaller, i.e., subordinate semantic unit (6).

[13.] 16. A fractal network according to claim 13 or 14,
[10 or 11] *characterized in that* the scaling
information VS has the function of describing the
type of relation with a more general or more specific
semantic unit (6).

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[14.] 17. A fractal network according to any one of claims 1 to 16, [1 to 13] *characterized by* a distance function indicating the semantic distance between two respective semantic units (6).

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[15.] 18. A fractal network according to claim 17, [6 and 14] *characterized in that* the distance function is determined through a suitable mathematical function of a variable parameter G which may be present in several linking units (1 to 5) and expresses the strength of the mutual linking.

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[16.] 19. A fractal network according to any one of claims 1 to 18, [1 to 15] *characterized in that* the informational contents of the semantic units and/or linking units, besides or instead of optionally static data, also contain algorithms and/or functions and/or mathematical formulae.

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[17.] 20. A fractal network according to any one of claims 1 to 19, [1 to 16] *characterized in that the*

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informational contents of at least some of the semantic units (6) constitute attributes more closely describing further semantic units (6) or linking units (1 to 5).

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[18.] 21. A fractal network according to claim 20 [17] characterized in that the network furthermore contains specific linking units (1 to 5) having the function of establishing the linking of semantic units (6) constituting attributes with those semantic units (6) and/or linking units (1 to 5) to which these attributes are associated.

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[19.] 22. A fractal network according to claim 20 or 21, [17 or 18] characterized in that the attributes optionally contain values which are elements from a set, a range, a list or another ordered or inordinate structure.

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[20.] 23. A fractal network according to claim 22, [19] characterized in that the ordered or inordinate structure constituting the respective attribute is formed by figures, calendar data, audio data, video data, text data, tables, image data, geometry data, fuzzy-logic sets or bundled data or a combination of these.

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[25.] 24. A fractal network according to any one of claims 1 to 23, [1 to 24] characterized in that semantic units (6) and/or parts of the fractal network can be classified.

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5 [26.] 25. A fractal network according to claim 24, [25]
characterized in that classification is carried out
by determining the one master dimension that
indicates how well the respective semantic units (6)
or the partial fractal network, respectively, fit in
a given location, and/or by determining those
locations in the fractal network in which the
respective semantic units (6) or the partial fractal
10 network, respectively, fit particularly well, wherein
it is possible to jointly indicate the respective
master dimensions.

15 [27.] 26. A fractal network according to [any one of]
claim[s] [1 to 26] 25, characterized in that the
semantic units (6) contain a marking which indicates
whether it is a matter of a new input unit or of an
already existing unit, with input units optionally
20 being present as partial fractal networks, and/or
optionally not yet being connected with the network
through linking units (1 to 5).

25 [28.] 27. A fractal network according to claim 26 [and
27], characterized in that incorporation of a new
unit or of a new partial network, respectively, into
the fractal network is carried out by taking into
consideration the classification.

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[29.] 28. A fractal network according to claim 26 or 27,
[27 or 28] characterized in that new semantic units
(6) can be linked with a start-Janus unit.

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[30.] 29. A fractal network according to any one of claims 1 to 28 [29], characterized in that restrictions can be imposed on the semantic units (6) and/or linking units (1 to 5) regarding those kinds of units with which they may be linked.

[31.] 30. A fractal network according to any one of claims 1 to 29 [30], *characterized by* one or several input/output devices for inputting and outputting, respectively, the fractal network or part thereof.

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